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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,537	06/18/2002	Patrick Egermann	612.41232X00	5547
20457	7590	07/14/2005		
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873			EXAMINER PHAN, THAI Q	
			ART UNIT 2128	PAPER NUMBER

DATE MAILED: 07/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/070,537

Applicant(s)

EGERMANN ET AL.

Examiner

Thai Q. Phan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 June 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 03/2002.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

This Office Action is in response to patent application S/N: 10/070,537, filed on 06/18/2002. Claims 1-9 are pending.

#### ***Information Disclosure Statement***

The information disclosure statement filed on 03/07/2002 was considered.

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Moulu et al, US patent no. 6,021,662.

As per claim 1, Moulu anticipates a method and system for modeling fluid displacement in a porous medium with feature limitations very identical to the claimed invention. According to Moulu, the method includes steps:

Experimental determination of the variation curve of capillary pressure in the pores of a sample of this porous medium in the presence of the wetting fluid and of the non-wetting fluid,

Modeling the pores of the porous medium by a distribution of capillaries with a fractal section by considering a stratified distribution of the fluids in the pores, the wetting fluid spreading out in contact with the walls and around the at least one other fluid,

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Determination of the fractal dimension values corresponding to a series of given values of the saturation in the liquid phases,

Modeling hysteresis effects for injection fluid displacement (col. 4, lines 26-30, col. 5, line 25 to col. 7, line 13),

Modeling the relative permeabilities directly in the form of analytic expressions depending on the different fractal dimension values obtained, and entering the relative permeabilities into a porous medium simulator and determination of optimum displacement conditions for the mixture of fluids in the porous medium as claimed (col. 3, line 41 to col. 4, line 37, for example).

As per claim 2, Moulu anticipates a distribution of capillaries with a fraction distribution, a stratified distribution of the fluids in the pores, wetting fluid spreading out in contact with the walls, pores centre, fluid distributed in the form of an annular film, etc.

As per claims 3-9, Moulu anticipates the optimum characteristics of substances added to wetting fluid slugs injected in a formation with gas slugs in order to displace hydrocarbons in place and to drain polluting substances.

### ***Conclusion***

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. US patent no. 4,381,665, issued to Levine et al, on May 1983
2. US patent no. 4,893,504, issued to O'Meara et al, on Jan. 1990
3. US patent no. 6,185,985 B1, issued to Fleury et al, on Feb. 2001

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4. US patent application publication no, 2002/0013687 A1, issued to Ortoleva, Peter, on Jan. 2002

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai Q. Phan whose telephone number is 571-272-3783. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jean Homere can be reached on 571-272-3780. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 06, 2005



Thai Phan  
Patent Examiner